RESPONSE TO COMMENTS
DRAFT TMDL REPORT FOR GREAT, GREEN AND BOURNES PONDS
(Report Dated October 19, 2005)

TOWN OF FALMOUTH INTERNAL REVIEW COMMENTS
January 9, 2006

Amy Lowell, Wastewater Department

Comment (1): Page ii, first paragraph. This paragraph uses the present total load numbers from the MEP report, but these totals were incorrect in the MEP report, and have been corrected in Table 3 on page 16 of this TMDL report. The load numbers in this paragraph should be corrected to match those in Table 3.
Response: The load numbers have been corrected.

Comment (2): Page iv, Appendix A-1 has incorrect title here and in Appendix (references Waquoit Bay).
Response: The titles have been corrected.

Comment (3): Page 3, Table 1B. The title for this table should be modified – the table doesn't list TMDLs, it compares impaired parameters listed by DEP and SMAST.
Response: The title for Table 1B has been modified too more accurately reflect the contents.

Comment (4): Page 6, Table 1C. MEP report says DO < 4 mg/L up to 4% of time (not 2%).
Response: This error has been corrected.

Comment (5): Figure 5 (Figure 1 is the same figure) shows that the sediments contribute more than 40% of the nitrogen load to these subembayments. In comments on MEP reports, the Town asked a number of questions about benthic flux and the model's sensitivity to this widely ranging and sometimes very substantial input.
Response: Figure 1 and 5 are the same, the sediments do contribute more that 40% of the N load.

Comment (6): Page 12 number 1) says that "sentinel subembayments" are selected. Aren't single sentinel points within embayments selected?
Response: The TMDL has been modified to consistently use the term sentinel station and not sentinel subembayment.

Comment (7): Page 13, Table 2. The Sub-Embayment Threshold Nitrogen Concentrations do not match those in Table ES-1 or Table VIII-5 of the MEP report (or those in the text on pages 14 and 15, as noted in later comment). In this table (Table 2), the same threshold concentration is listed for each subembayment, though in Table VIII-5 in the MEP report, different threshold concentrations are listed for each subembayment. I think there should be a table that presents the final thresholds for each embayment, that matches the threshold numbers in the text on pages 14 and 15. It is important that it be clear what the threshold concentrations are and where they are to be measured, in order to allow monitoring of progress towards the threshold concentrations over time.
Response: Table 2 has been changed to show the correct target threshold concentration for each sentinel station.

Comment (8): Page 13, Table 2. I do not think it is appropriate to use 3 significant digits for threshold concentrations, given the uncertainties involved. Two significant digits are used in the text on pages 14 and 15, which I think is more appropriate.
Response: Table 2 has been modified to show two significant figures.

Comment (9): Page 14, first sentence. Sentence references table ES-1 of the MEP report, but this table has not been corrected by the MEP.
Response: The updated data has been used in this sentence.

Comment (10): Page 14, paragraph 4. Change "GT6" to "GT5".
Response: This error has been corrected.

Comment (11): Pages 14-15. The threshold concentrations listed in the text in this section do not match those in Table 2 of this document, or in Table ES-1 or Table VIII-5 in the MEP report (though they do match those in the text in the MEP report).
Response: Table 2 has been corrected to take care of the discrepancy.

Comment (12): Pages 14-15. As stated in the Town's comments on the MEP report, it would be preferable for the MEP to identify one sentinel point and one threshold for each pond. It seems confusing and overly complex to identify multiple thresholds for some ponds. This will make determination of compliance more complicated. Also, it is unclear why the number of sentinel locations and thresholds varies among the three ponds (there is only one threshold for Great Pond, two for Green Pond, three for Bournes Pond).
Response: Table 2 has been modified to show the sentinel station ID's and target threshold concentrations.

Comment (13): Page 16, first paragraph. Paragraph references table ES-1 of MEP report, but the TN load column of that report is incorrect (it has been corrected in the TMDL report).
Response: Comment noted.

Comment (14): Page 17, Table 4. The values in this table are those from Table 4 in the Quashnet, Jehu and Hamblin TMDL report. A scenario from the Great Green and Bournes Ponds report needs to be selected for presentation here.
Response: This error has been corrected.

Comment (15): Page 17. In paragraphs 1 and 2, the text needs to be revised to reflect the specific scenario you choose to outline in Table 4.
Response: This error has been corrected.

Comment (16): Page 20, paragraph 4. Change "Waquoit Bay system" to "Great, Green and Bournes Ponds."
Response: This error has been corrected.

Comment (17): Page 22, paragraph 5. Cut first sentence (it is repeated as 4th sentence).
Response: This duplicate sentence has been taken out.

<u>Brian Currie, Planning Department</u>

Comment (18): It was my understanding that the Technical Report was to be amended to reflect our earlier comments, e.g. utilizing standard measure of kg/day, identifying the correct recharge map used in the analysis, etc. This should be accomplished and the final report should be based on the Technical Report as corrected.
Response: The Final TMDL is based on the Technical Report as corrected.

Comment (19): Page ii of the executive summary is inconsistent with page 16/Table 3 of the report.
Response: This inconsistency has been corrected.

Comment (20): Table 4 on page 17 is inconsistent with Table 3. In fact, I have no idea what table 4 means.
Response: This inconsistency has been corrected. Table 4 differs from Table 3 in that it only identifies the portion of the entire load that is believed to be controllable including land use, treatment plant effluent and septic system loadings. Table 3 however identifies all sources including those that are not believed to be controllable.

Comment (21): Table 5. Why is the Coonemessett River included with Great Pond? Why not the Backus River or Bourne's Brook too?
Response: The Coonemessett River was pointed out as a separate impaired water body segment in the MEP Technical Report and the Backus River and Bournes Brook were not.

Comment (22): Appendix A. Cites the Waquoit Bay sub-embayments.
Response: This error has been corrected.

Comment (23): The Tables in this 10/19/05 report should reference the tables from the Technical Report. For example, Table 5 is based on Table ES-2 of the Technical Report.
Response: The reference to Table ES-2 has been added to the text.

Comment (24): Several people commented at the public meeting and several people submitted written comments (Mary Little, Edward Jalowiec) as to the effect of this TMDL on the 40B housing project proposed in the watershed of Little Pond also in Falmouth.
Response: MassDEP feels it would be more pertinent to respond to those comments during the response period of the upcoming Little Pond Nutrient TMDL. MassDEP is currently forming policy on this issue, as it is a very important one for the Town.

Brad Stumcke Comments

Comment (25): Steve, Mike and Russ: Thanks for a splendid TMDL report on Green, Great and Bournes Ponds. If the Town hasn't received the message before, they should now.
Response: Comment appreciated.

Comment (26): I want to respond to your request for input to improve the reports. As I mentioned the other evening, both the MEP Report and the TMDL reports emphasize the impact of the deteriorating water quality on ell grass, aquatic creatures, algae blooms and odors. That is all true but for one not living near an estuary, it becomes a "so what". They may not swim in the pond or shellfish in the pond so why should they care!!! Economics!!!!
The pond problem is a problem for everyone in town and until they realize it, it's going to be impossible to garner support to fix it. Therefore I recommend the reports emphasize the economic impact on a deteriorating pond. Maybe you have to spell it out somewhere in the report that land values around the pond will decrease with deteriorating conditions. The result is tax revenues generated by those values will decrease and the responsibility to make it up will have to be thrust on the shoulders of those who don't live near the ponds. I gave the example in Falmouth of approximately 35% of the land tax revenue is generated by water factors; waterside or water view. Each Town will be different but you can't downplay economic aspect of the problem.Thanks again. Brad Stumcke, President FACES
Response: The economic issues in this TMDL are large and important. Both the potential loss from degraded water quality and the large scope of the cleanup. MassDEP feels they are best handled locally.

Edward Jalowiec Comments

Comment (27): I was present at the DEP presentation in Falmouth this week. Several speakers from the public mentioned the impact of development, including 40B projects, on the embayment systems. A massive 40B is proposed on the shores of Little Pond. Attached for your information is the Falmouth Conservation Commission Order of Conditions for this project, reference DEP File Number 25-3150. I strongly believe that no development of significant size should be allowed in the estuaries areas until plans are implemented to reduce the nitrogen load in these ponds to acceptable levels. Thank you and the rest of the DEP Team that came to Falmouth on Tuesday ,your presentation was very informative. Regards, Edward Jalowiec
Response: MassDEP feels it would be more pertinent to respond to those comments during the response period of the upcoming Little Pond Nutrient TMDL. MassDEP is giving full consideration of the results of the Little Pond MEP technical report in the review of the groundwater discharge permit for this project.

David S. Thomas Comments

Comment (28): I am writing to comment on the Estuaries Report examining nitrogen loading in Great, Green, and Bournes ponds.

Though I am quite familiar with conditions in Great and Green I will confine my remarks to Bournes Pond as several generations of the Thomas family has been fortunate to have lived on the shores of Bournes Pond since 1950. From the beginning the pond was a focus of our attention and concern and remains such to the present. From the beginning to the present we have maintained an intimate relationship with the pond: from swimming, fishing for fish, crabs, clams, quahogs, walking its shores, watching the osprey and sea birds, to making use of the seaweed washed up on our beach for our gardens. As you can imagine we have seen the Pond undergo many changes over the decades from being almost pristine in the 1950s and '60s, to becoming badly stressed in the early 1980s before the construction of the new breachway in 1988, to undergoing rapid and remarkable recovery in the aftermath of the construction of the breachway, to its present condition.

The report and its recommendations, it seems to me, holds out the realistic possibility of returning Bournes Pond, and Green and Great as well, to a condition while not pristine by any means, will be a marked improvement over present conditions. I fully support the recommendations for sewering East Falmouth and for widening the breachway at Bournes. Naturally this will have to be paid for, at least in part, with higher taxes and that will mean that it will need to be approved at Town Meeting, and of course, there is no assurance, that will happen. While taxes in Falmouth are already among the highest of the towns on the Cape, as a property owner who has enjoyed the pond and all it has provided over the decades, I feel we have a responsibility to support this attempt to save the ponds from further environmental degradation, caused, for the most part, by human activity. Obviously, as an owner of property on the pond I will both benefit and pay. The benefit, though, will not be monetary as our taxes will increase while, because we will not sell the property, we will not experience monetary gain. Nevertheless, to have Bournes, Green and Great restored to a greater degree of "health" will unquestionably benefit all residents of Falmouth, both for the physical and aesthetic pleasure they will afford to all, as well as the economic benefits they will return.

This being said, I wish to make a couple of comments on the assumptions and the conclusions of the report. My perspective is that of a close observer with several decades of experience with the flora and fauna present in and around Bournes Pond, not that of a biologist or an ecologist. While I respect and trust the data presented to describe the failing health of the ponds, I wonder about the conclusions. Specifically, that the nitrogen loading has resulted in the loss of eelgrass which has in turn adversely impacted the aquatic habitat of marine life. Our observations of Bournes Pond since the construction of the new breachway do not really match that description. What we have observed is the marine life has recovered nicely, the pond now holds

abundant shellfish (when it is not opened to intensive shell fishing for too long, that is) , a resident abundant striped bass population including large fish over 30", other fish such as butter, summer flounder, toad, and eels along with large numbers of legal sized blue claws. The bird population is equally abundant: Over the previous 10 summers at least there have been up to 4 nesting pairs of osprey, 2 nesting pairs of great blue heron, and, of course, the ubiquitous, far too numerous swans and geese. Additionally, the eelgrass is flourishing throughout the pond both upper and lower, with the possible exception of the upper reaches of Israel's Cove. In fact, if anything, these indicators of the health of the pond have increased since the late 1980s when my son and I were volunteer pond watchers for Prof. Howe's earlier studies of the ponds.

It is true that eelgrass has disappeared in some areas but our observation is that it is largely a result of higher water levels and human and bird activity. There is no question that water levels have risen since the construction of the new bridge: soon after the new bridge we were able to pass under it at all tides with our Whaler, but over the last few years we can not do so at high tide only because we have modified the center console, and it is impossible to pas underneath the bridge at flood tides. Higher water levels have resulted in constant flooding of some areas where eel and American beachgrass grows and it has gradually killed or severely thinned out these areas. On the other hand eelgrass has begun to flourish in areas where it was thin or non-existent before the construction of the new breachway. Another source of erosion of the eelgrass has occurred as a result of property owners around the pond leaving their boats pulled up on the shore, covering the grass for the summer and invariably stressing it so that over several years it dies. Additionally, property owners have cut and even pulled up eelgrass to create a "beach" in front of their property. I have watched this happen with dismay. Another source of "grass-stress" are the swans and geese, but particularly the former. Swans are voracious in the search for food among the grass and destructive of it because of that and because they nest (along with the geese) on the grass-covered flats and literally destroy the grass because of their activity, and especially, because of the cumulative effect of their droppings (another source of nitrogen, of course).

Overall, it seems to us, that the pond has more not less eel and beachgrass then it did 18 years ago, just as it has more abundant marine life. We realize that nitrogen loading will have growing effects and something needs to be done as quickly as possible to reduce it, but given the near certainty of higher water levels I am not sure lower nitrogen levels will offset higher water levels and result in more eelgrass, but let us hope it will.

However, this is another challenge we face for the future. The immediate challenge is that something must be done to reduce the human impacts on the ponds and I support the recommendations of the Report as providing the steps that must be taken. In the meantime, If you have not been to Bournes Pond and walked along its shores or had a chance to see it from a boat, to observe its condition first hand, especially its grasses and its marine life, then I urge you to do so. I will be more than happy to offer my services as a kind of guide should you wish to do so. Sincerely yours, David Thomas
Response: The TMDL just lists the approximately 64% loss of eelgrass areas since the 1951 aerial photographs. MassDEP agrees with you that something needs to be done.

Mary Little comments

Comment (29): The greatest threat to Cape Cod today is the wastewater issue. It affects every aspect of water on the Cape. I urge you to begin a discussion with the Housing & Community Development Dept and alert them to the pitfalls of allowing increased density to create affordable housing units on parcels that may have wetlands, vernal pools, white cedar swamps and ponds in coastal resources areas. They need to give the cape towns latitude on this important issue and DEP needs to work with them to advise them of the seriousness of the situation. Thank you for your presentation, but I worry that saving the estuaries is already a losing battle. The developers are developing at a faster pace, than our state laws to save the environment.

Response: MassDEP feels it would be more pertinent to respond to those comments during the response period of the upcoming Little Pond Nutrient TMDL. MassDEP is giving full consideration of the results of the Little Pond MEP technical report in the review of the groundwater discharge permit for this project.

Alison Leschen Comments

Comment (30): First, I fully support Brad Stumke's point of getting the potential economic impact in to the picture. In addition to the property tax issues he mentions, we should add potential lost tourist dollars if the coastal waters become truly fouled. In Falmouth, that should be of major concern.
Response: The economic issues in this TMDL are large and important. Both the potential loss from degraded water quality and the large scope of the cleanup. MassDEP feels they are best handled locally.

Comment (31): Second, we have found in Boston Harbor that even though the water quality in terms of nutrients is greatly improved since the outfall, there are lingering consequences of years of deposition. We had to eliminate most of the Harbor (virtually all of the shoreline) for eelgrass restoration because the sediment is either too "fluffy" or "mucky" to sustain transplants. These sediments are constantly re-suspending, so TSS has actually not changed much and light attenuation continues to be an issue for eelgrass. I wonder if this same issue will be faced in these ponds, and even if nutrient inputs are reduced, the sediment may remain unsuitable for habitat restoration. What are your thoughts on this?
Response: This has also been a concern at MassDEP. It will be an interesting challenge as implementation moves forward to see how this gets taken care of if it indeed is a problem.

Comment (32): Third is an idea I had at least for new construction, if not retrofitted old, that I've never seen mention of (though admittedly I haven't looked extensively!). Why not plumb houses separately for grey and black water. Grey water can feed into the typical title V system, where it should add little or no N to the groundwater. Blackwater would feed into a tight tank, which could be pumped regularly, maybe by town honey wagons that are paid for in your taxes, just like trash collection. Waste could be brought to centralized treatment facilities, where I assume the much lower volume would reduce operating costs and increase the number of houses that could be served. It would save the cost of piping all that wastewater (most of which is benign) all the way from houses to a WWTF. I'm sure retrofitting existing houses would be a problem, so it probably wouldn't help that much for E. Falmouth ponds where it's almost built out, but it seems to make sense for new construction. Am I missing some key problem, or could this work? Has DEP considered this?
Response: This has been talked about before. This has not been implemented before because of the large number of pump outs which would be required from the blackwater holding tanks and because the impact would be minimal since most communities are so close to buildout.